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Beyond the Conventional: Hyperdeformation and Exotic Superfluidity in Atomic Nuclei

Atomic nuclei, as strongly correlated many-nucleon systems, exhibit a variety of collective phenomena. Prominent examples include nuclear deformation and superfluidity. In this lecture, I will discuss unconventional types of deformation and superfluidity that differ from the usual ones. As an introduction, I will briefly review how conventional deformation and superfluidity are described within the framework of the nuclear mean-field theory. I will then extend the mean-field theory to high-spin and superdeformed states and discuss hyperdeformed states. In the latter part of the lecture, I will discuss proton–neutron pair correlations and triplet-P type pair correlations as examples of exotic pairing correlations.

Research field of your presentation

Theoretical Low-energy nuclear physics

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